

No. 2023-1501, -1554

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**United States Court of Appeals  
for the Federal Circuit**

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**APPLE, INC.,**

*Appellants*

**LG ELECTRONICS INC., LG ELECTRONICS USA, INC., GOOGLE LLC,**

*Appellees,*

*v.*

**GESTURE TECHNOLOGY PARTNERS, LLC**

*Cross-Appellant.*

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Appeal from the United States Patent and Trademark Office in *Inter Partes*  
Review Nos. IPR2021-00921, IPR2022-00092, and IPR2022-00362 – U.S.  
Patent No. 8,878,949

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**OPENING BRIEF AND RESPONSE BRIEF OF CROSS-APPELLANT  
GESTURE TECHNOLOGY PARTNERS, LLC**

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## PATENT CLAIMS AT ISSUE

**U.S. Patent No. 8,878,949**

**1.** A portable device comprising:

a device housing including a forward facing portion, the forward facing portion of the device housing encompassing an electro-optical sensor having a field of view and including a digital camera separate from the electro-optical sensor; and

a processing unit within the device housing and operatively coupled to an output of the electro-optical sensor, wherein the processing unit is adapted to:

determine a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output, and control the digital camera in response to the gesture performed in the electro-optical sensor field of view, wherein the gesture corresponds to an image capture command, and wherein the image capture command causes the digital camera to store an image to memory.

**2.** The portable device of claim 1 wherein the determined gesture includes a hand motion.

**3.** The portable device of claim 1 wherein the determined gesture includes a pose.

**4.** The portable device of claim 1 wherein the electro-optical sensor is fixed in relation to the digital camera.

**5.** The portable device of claim 1 further including a forward facing light source.

**6.** The portable device of claim 1 wherein the electro-optical sensor defines a resolution less than a resolution defined by the digital camera.

**7.** The portable device of claim 1 wherein the electro-optical sensor includes at least one of a CCD detector and a CMOS detector.

**8. A computer implemented method comprising:**

providing a portable device including a forward facing portion encompassing a digital camera and an electro-optical sensor, the electro-optical sensor having an output and defining a field of view;

determining, using a processing unit, a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output, wherein the determined gesture corresponds to an image capture command; and

capturing an image to the digital camera in response to the determined gesture corresponding to the image capture command.

**9. The method according to claim 8 wherein the determined gesture includes a hand motion.**

**10. The method according to claim 8 wherein the determined gesture includes a pose.**

**11. The method according to claim 8 wherein the electro-optical sensor includes first and second sensors in fixed relation relative to the digital camera.**

**12. The method according to claim 8 wherein the electro-optical sensor defines a resolution less than a resolution defined by the digital camera.**

**13. An image capture device comprising:**

a device housing including a forward facing portion, the forward facing portion encompassing a digital camera adapted to capture an image and having a field of view and encompassing a sensor adapted to detect a gesture in the digital camera field of view; and

a processing unit operatively coupled to the sensor and to the digital camera, wherein the processing unit is adapted to:

detect a gesture has been performed in the electro-optical sensor field of view based on an output of the electro-optical sensor, and

correlate the gesture detected by the sensor with an image capture function and subsequently capture an image using the digital camera, wherein the detected gesture is identified by the processing unit apart from a plurality of gestures.

**14.** The image capture device of claim 13 wherein the detected gesture includes a hand motion.

**15.** The image capture device of claim 13 wherein the detected gesture includes a pose.

**16.** The image capture device of claim 13 further including a forward facing light source.

**17.** The image capture device of claim 13 wherein the sensor defines a resolution less than a resolution defined by the digital camera.

**18.** The image capture device of claim 13 wherein the sensor is fixed in relation to the digital camera.

FORM 9. Certificate of Interest

Form 9 (p. 1)  
March 2023

UNITED STATES COURT OF APPEALS  
FOR THE FEDERAL CIRCUIT

CERTIFICATE OF INTEREST

**Case Number** 23-1501, -1554  
**Short Case Caption** Apple Inc. v. Gesture Technology Parnters, LLC  
**Filing Party/Entity** Gesture Technology Partners, LLC

**Instructions:**

1. Complete each section of the form and select none or N/A if appropriate.
2. Please enter only one item per box; attach additional pages as needed, and check the box to indicate such pages are attached.
3. In answering Sections 2 and 3, be specific as to which represented entities the answers apply; lack of specificity may result in non-compliance.
4. Please do not duplicate entries within Section 5.
5. Counsel must file an amended Certificate of Interest within seven days after any information on this form changes. Fed. Cir. R. 47.4(c).

I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 10/18/2023

Signature: /s/ Fred I. Williams

Name: Fred I. Williams

**FORM 9. Certificate of Interest**

**Form 9 (p. 2)**  
March 2023

<b>1. Represented Entities.</b> Fed. Cir. R. 47.4(a)(1).	<b>2. Real Party in Interest.</b> Fed. Cir. R. 47.4(a)(2).	<b>3. Parent Corporations and Stockholders.</b> Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities.  <input type="checkbox"/> None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities.  <input type="checkbox"/> None/Not Applicable
Gesture Technology Partners, LLC	N/A	N/A

Additional pages attached

## FORM 9. Certificate of Interest

Form 9 (p. 3)  
March 2023

**4. Legal Representatives.** List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

<input checked="" type="checkbox"/> None/Not Applicable	<input type="checkbox"/> Additional pages attached

**5. Related Cases.** Other than the originating case(s) for this case, are there related or prior cases that meet the criteria under Fed. Cir. R. 47.5(a)?

Yes (file separate notice; see below)    No    N/A (amicus/movant)

If yes, concurrently file a separate Notice of Related Case Information that complies with Fed. Cir. R. 47.5(b). **Please do not duplicate information.** This separate Notice must only be filed with the first Certificate of Interest or, subsequently, if information changes during the pendency of the appeal. Fed. Cir. R. 47.5(b).

**6. Organizational Victims and Bankruptcy Cases.** Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

<input checked="" type="checkbox"/> None/Not Applicable	<input type="checkbox"/> Additional pages attached

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## I. STATEMENT OF RELATED CASES

Pursuant to Federal Circuit Rule 47.5, Appellee Gesture Technology Partners, LLC states that no other appeal in or from the same civil action in the lower court was previously before this or any other appellate court.

Cases pending in this or any other court which will directly affect or be directly affected by this Court's decision in the pending appeal are listed below.

- *Gesture Technology Partners, LLC v. Apple Inc.*, Case No. 4:22-cv-04806 (N.D. Cal.)
- *Gesture Technology Partners, LLC v. LG Electronics, Inc.*, Case No. 2:21-cv-19234 (D.N.J.)
- *Gesture Technology Partners, LLC v. Motorola Mobility LLC*, Case No. 1:22-cv-03535 (N.D. Ill.)
- *Gesture Technology Partners, LLC v. Lenovo Grp. Ltd. et al.*, Case No. 6:21-cv-00122 (W.D. Tex.)
- *In re: Gesture Technology Partners, LLC*, Case No. 2024-1037 (Fed. Cir.)
- *In re: Gesture Technology Partners, LLC*, Case No. 2024-1038 (Fed. Cir.)

## II. JURISDICTIONAL STATEMENT

The Board issued its Final Written Decision on December 5, 2022. Appx1-40. Apple filed a notice of appeal on February 6, 2023. Appellant Br. 3. Patent Owner filed a notice of cross-appeal on February 21, 2023. This Court has jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

### **III. STATEMENT OF THE ISSUES**

1. Whether the Board’s finding that claims 4, 11, and 18 of the ’949 Patent are patentable in view of *Numazaki* and *Nonaka* is supported by substantial evidence.
2. Whether substantial evidence supports the Board’s determination that claims 1-3, 5-10, and 12-17 of the ’949 Patent are unpatentable over *Numazaki* and *Nonaka*.
3. Whether the USPTO has jurisdiction over the expired ’949 Patent.

### **IV. STATEMENT OF THE CASE AND FACTS**

#### **A. Procedural Background**

This appeal involves U.S. Patent No. 8,878,949 (the “’949 Patent), which is owned by Cross-Appellant Gesture Technology Partners, LLC (“Patent Owner”). Appx41. The ’949 Patent was filed on August 7, 2013, as U.S. Patent Application No. 13/961,452. *Id.* The ’949 Patent was issued on November 4, 2014. *Id.* Appellant Apple, Inc. (“Petitioner”) filed a petition for *inter partes* review of claims 1-18 of the ’949 Patent on June 2, 2021. Appx117-187 (the “Petition”). The Patent Trial and Appeal Board (the “Board”) authorized *inter partes* review of the challenged claims on December 13, 2021. Appx240-267. Patent Owner filed a response to the Petition on March 7, 2022. Appx280-317. Petitioner filed a reply on May 31, 2022 (Appx335-362), and Patent Owner filed a sur-reply on July 12,

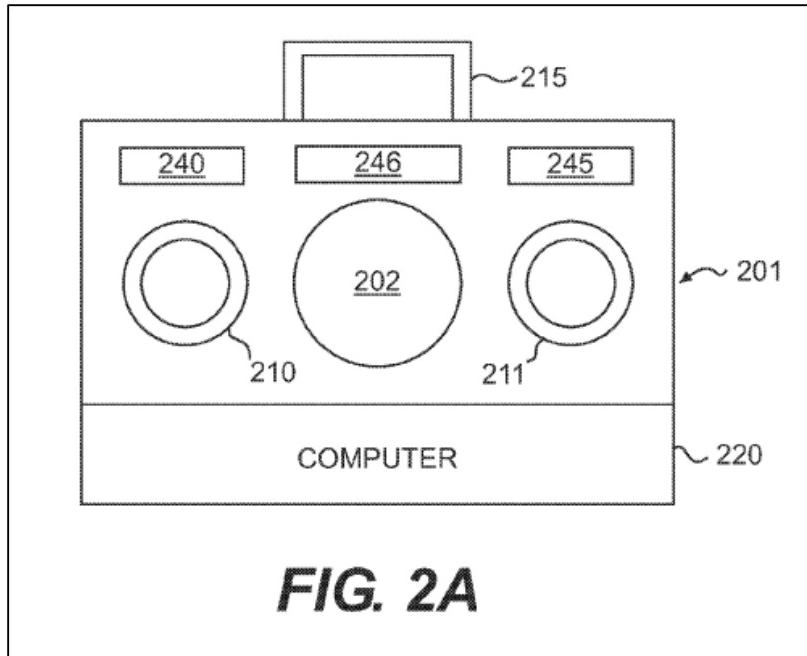
2022 (Appx363-379). On September 14, 2022, the Board heard oral argument regarding the Petition and the Parties' briefing. Appx403-411. On December 5, 2022, the Board issued a Final Written Decision ("FWD"). Appx1-40. The Board concluded that claims 1-3, 5-10, and 12-17 were unpatentable as shown in the following table:

<b>Claims</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Claims Shown Unpatentable</b>	<b>Claims Not shown Unpatentable</b>
1-18	103	Numazaki, Nonaka	1-3, 5-10, 12-17	4, 11, 18
6, 12, 17	103 <sup>9</sup>	Numazaki, Nonaka, Aviv		
<b>Overall Outcome</b>			1-3, 5-10, 12-17	4, 11, 18

Appx38.

## B. The '949 Patent

The '949 Patent is entitled "Camera Based Interaction and Instruction." Appx41, Title. The '949 Patent is directed towards methods and apparatus to "enhance the quality and usefulness of picture taking for pleasure, commercial, or other business purposes." *Id.*, Abstract. An example camera system is depicted in FIG. 2A, below.

**FIG. 2A**

Appx44, Fig. 2A. Camera system (201) may include a central camera (202) having “high resolution and color accuracy,” one or more other cameras (210, 211) having a “lower resolution,” and light sources such as LED arrays (240, 245). Appx52, 5:1-9, 5:27-29. The camera system (210) also includes a computer (220) which “processes the data from cameras 210 and 211 to get various position and/or orientation data concerning” a subject to be photographed. *Id.* at 5:24-33, 5:45-49. One can use camera system (201) to capture an image of a subject when the “subject undertakes a particular signal comprising a position or gesture” as determined by the computer (220). *Id.*

### C. The Board’s Final Written Decision for the ’949 Patent

The petition asserted two grounds of unpatentability based on three alleged prior-art references:

<b>Proposed Ground of Unpatentability</b>	<b>Exhibits</b>
<b>Ground 1:</b> Claims 1-18 are obvious under pre-AIA 35 U.S.C. § 103 over U.S. Patent 6,144,366 to Numazaki, et al. (“ <i>Numazaki</i> ”) in view of JPH4-73631 to Osamu Nonaka (“ <i>Nonaka</i> ”)	Ex. 1004, Ex. 1005

<b>Proposed Ground of Unpatentability</b>	<b>Exhibits</b>
<b>Ground 2:</b> Claims 6, 11, and 12 are obvious under pre-AIA 35 U.S.C. § 103 over <i>Numazaki</i> in view of <i>Nonaka</i> and in further view of U.S. Patent No. 5,666,157 to David G. Aviv (“ <i>Aviv</i> ”)	Ex. 1004, Ex. 1005, Ex. 1006

Appx124-125.

For Ground 1, Petitioner alleged that claims 1-18 of the ’949 Patent are rendered obvious under 35 U.S.C. § 103 by U.S. Patent 6,144,366 to Numazaki et al. filed October 17, 1997, and issued on November 7, 2000 (“*Numazaki*”), in view of JP H4-73631 to Osamu Nonaka filed July 13, 1990, a Japanese unexamined patent application that published on March 9, 1992, filed by Olympus Optical Co., Ltd. (“*Nonaka*”). Appx124. For Ground 2, Petitioner alleged that claims 6, 11, and 12 of the ’949 Patent are rendered obvious under 35 U.S.C. § 103 by U.S. Patent 5,666,157 to David G. Aviv that was filed on January 3, 1995, and issued on September 9, 1997 (“*Aviv*”), in combination with *Numazaki* and *Nonaka*. Appx125. Ground 2 was not considered by the Board because the Board found claims 6, 11, and 12 unpatentable based on Ground 1. Appx35-36.

**1. Person Having Ordinary Skill in the Art (“PHOSITA”)**

For the purposes of the FWD, the Board found that a PHOSITA would have had at least a bachelor’s degree in electrical engineering or equivalent with at least one year of experience in the field of human computer interaction. Appx8. The Board found that additional education or experience may substitute for these requirements. *Id.*

**2. The Board found that the image capture elements encompass “capturing/storing video or still images.”**

The Board found that “the image capture command causes the digital camera to store an image to memory” in claim 1, “capturing an image to the digital camera in response to . . . the image capture command” in claim 8, and “correlate the gesture detected . . . with an image capture function and subsequently capture an image using the digital camera” should be construed broadly enough to encompass “capturing/storing video or still images.” Appx9.

**3. Claim 1 in view of Numazaki and Nonaka.**

**a. Limitation 1(a) “*a device housing including a forward facing portion, the forward facing portion of the device housing encompassing an electro-optical sensor having a field of view and including a digital camera separate from the electro-optical sensor*”**

The Board rejected Patent Owner’s argument that a PHOSITA would not have understood *Numazaki*’s reflected light extraction unit 102 to be the claimed electro-optical sensor because it comprises two separate cameras (i.e., photo-detection units

109, 110) and difference calculation unit 111. Appx17 (citing Appx293, Appx366, and Appx1985-1987 ¶¶ 44-45).

The Board found *Numazaki*'s reflected light extraction unit 102 includes first photo-detection unit 109, second photo-detection unit 110, and difference calculation unit 111. Appx945, 11:16–19. Each of the first and second photo-detection units “detects the optical image formed on the photo-detection plane and converts it into image signals corresponding to the received light amounts.” *Id.* at 11:20–23. Difference calculation unit 111 calculates the difference between the images detected by the first and second photodetection units and outputs the obtained difference. *Id.* at 11:53–56. More specifically, “reflected light extraction unit 102 sequentially outputs the reflected light amount for each pixel of the reflected light image” as analog signals that are amplified by amplifier 113 and converted into digital signals by converter 114. *Id.* at 11:59–64.

The Board found that *Numazaki*'s disclosure of the reflected light extraction unit 102 describes a unit that senses light and converts the sensed light into electronic signals, which is consistent with the plain meaning of an “electro-optical sensor.” Appx18.

Patent Owner argued, with support from its expert, that *Numazaki* is silent regarding the “photo-detection sensor unit’ in Fig. 74 as being or including one or more of the ‘reflected light extraction unit 102’ and the “visible light photo-

detection array 351.” Appx294 (citing Appx1987-1988 ¶ 47). Patent Owner also argued that a PHOSITA would not find that the “photodetection sensor unit” in Fig. 74 of *Numazaki* “is or includes” one or more of the “reflected light extraction unit 102” and the “visible light photo-detection array 351” from Fig. 46 (i.e., the claimed “electro-optical sensor” and “digital camera,” respectively). Appx295-296 (citing Appx1989-1990 ¶ 49). The Board disagreed with Patent Owner and found that a PHOSITA would have been motivated to implement the videoconference functionality of *Numazaki*’s fifth embodiment into the laptop of the eighth embodiment. Appx16.

Petitioner asserted that this implementation would have been accomplished by using reflected light extraction unit 102 and visible photo-detection array 351 from *Numazaki*’s fifth embodiment. Appx144-145 (citing Appx959, 39:21–49 and Appx883, Fig. 46). Petitioner proposed modifying *Numazaki*’s eighth embodiment by including the reflected light extraction unit and the visible light photo-detection array from *Numazaki*’s fifth embodiment to provide videoconference functionality. Appx138-139, Appx144-145. The Board agreed with the Petitioner. Appx20.

Patent Owner argued that the Petition does not suggest that *Numazaki* expressly teaches that the eighth embodiment’s laptop includes the fifth embodiment’s components. Appx367-368. Petitioner stated that *Numazaki* “expressly contemplates incorporating these early-described embodiments in the

eighth embodiment portable devices.” Appx141, Appx342. The Board sided with Petitioner and found that this statement “discusses *incorporating* aspects of the first seven embodiments *into* the eighth embodiment and does not indicate that the eighth embodiment includes any aspects of the early embodiments prior to any modification.” Appx21.

The Board incorrectly concluded that *Numazaki* and *Nonaka* discloses limitation 1(a). Appx21.

- b. Limitation 1(b) “*a processing unit within the device housing and operatively coupled to an output of the electro-optical sensor, wherein the processing unit is adapted to: determine a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output*”**

Petitioner argued that one of ordinary skill in the art would have been motivated to implement the gesture recognition of *Numazaki*’s third embodiment into the eighth embodiment’s laptop device. Appx147. Petitioner also argued that one of ordinary skill in the art “would have understood that *Numazaki*’s third embodiment gesture detection process would be implemented by ‘a processing unit’ within *Numazaki*’s laptop device and adapted (via software) to detect a user’s gesture (or sequence of gestures).” Appx148 (citing Appx779-780 ¶¶ 53–54).

Patent Owner argued that *Numazaki* discloses an information input generation apparatus (“IIGA”) that includes feature data generation unit 103. Appx297 (citing

Appx942, 5:10–12; Appx840, Fig. 2). Patent Owner also argued that the IIGA in *Numazaki*'s third embodiment is configured as “a gesture camera” by implementing the feature input generation apparatus (and feature data generation unit) depicted in Figure 23. Appx297-298 (citing Appx942, 6:4–7; Appx954, 29:4–10; Appx861, Fig. 23; Appx1991-1992, ¶ 53).

Patent Owner explained that the IIGA in *Numazaki*'s fifth embodiment is configured as “a chromakey camera” by implementing the IIGA of Figure 2 with feature data generation unit 103 and visible light photo-detection array 351 depicted in Figure 46. Appx298-299 (citing Appx959, 39:17–23; Appx883, Fig. 46; Appx1992-1993 ¶ 54). Patent Owner argued the feature data generation units of Figures 23 and 46 have different implementations and different specialized units depending on whether the IIGA is configured as a gesture camera or a chromakey camera. Appx299 (citing Appx954, 29:4–10; Appx959, 39:17–23).

The Board disagreed with Patent Owner's arguments that “the Petition requires that *Numazaki*'s eighth embodiment laptop incorporate an IIGA configured as both a gesture camera and a chromakey camera” to meet both limitations [1(a)] and [1(b)], and that “*Numazaki* does not disclose that the IIGA can be configured as both a ‘gesture camera’ and a ‘chromakey camera.’” Appx299-302. The Board did not find this argument persuasive and agreed with the Petitioner. Appx22.

The Petitioner argued that it would have been obvious to one of ordinary skill in the art to modify the laptop of *Numazaki*'s eighth embodiment to include the gesture recognition of the third embodiment to initiate the video capture functionality of the fifth embodiment as suggested by *Nonaka*'s image capture command gesture teachings. Appx138-139. Patent Owner argued that "Petitioner does not explain how the 'reflected light image' from the 'reflected light extraction unit 102' would be accessed by both 'shape interpretation unit 333' from the third embodiment and 'extraction unit 353' from the fifth embodiment" or "how these specialized units would operate simultaneously or whether different units would operate at different times or what that timing functionality would require." Appx301. Petitioner replied to this argument by proposing that the third embodiment of *Numazaki* is used as a trigger mechanism to initiate the fifth embodiment. Appx345. The Board agreed with Petitioner's argument that a PHOSITA "would have been motivated to implement this gesture recognition as a means of allowing the user to initiate (or turn on) the fifth embodiment's videoconferencing functionality." *Id.* (quoting Appx149).

The Board concluded that *Numazaki* and *Nonaka* discloses limitation 1(b). Appx26.

- c. **Limitation 1(c) “control the digital camera in response to the gesture performed in the electro-optical sensor field of view, wherein the gesture corresponds to an image capture command, and wherein the image capture command causes the digital camera to store an image to memory”**

Petitioner argued that *Numazaki*'s fifth embodiment uses visible light photo-detection array 351 for taking video images and image memory unit 352 for storing the video images. Appx149 (citing Appx959, 39:32–35). Petitioner stated that the fifth embodiment processes the output of reflected light extraction unit 102 to identify an outline of the subject of the image and subtracts everything outside the outline to produce an extracted image without background information that is stored in extracted image memory unit 354. Appx149-150 (citing Appx959, 39:24–60, 40:32–35).

Patent Owner argued that because “*Numazaki*'s fifth embodiment discloses extracting faces of speaking persons for transmission via a ‘TV telephone,’” one of ordinary skill in the art “would recognize that to dial the telephone number, the user must physically interact with *Numazaki*'s laptop (e.g., keyboard), and thus the user would already be positioned ‘in place’ for the videoconference.” Appx303 (citing Appx959, 39:5–16; Appx1997 ¶62). Patent Owner argued there is no motivation to modify *Numazaki* based on *Nonaka*'s teachings because “[i]t would be redundant to require the user to then perform a gesture signaling that the user is ‘in place’ because

such is already known to the laptop by virtue of the physical interactions,” and one of ordinary skill in the art “would recognize that a user would be in reach of *Numazaki’s* laptop before and during a videoconference enabled by *Numazaki’s* laptop.” Appx303-304 (citing Appx1997-1998 ¶¶ 62–63).

The Board disagreed with Patent Owner and found that *Numazaki’s* fifth embodiment is not limited to a TV telephone as the disclosure refers to “the TV telephone, for example.” Appx959, 39:12–13. Instead, the Board agreed with Petitioner that a PHOSITA “would have understood that there are many scenarios in which a user would not be sitting in front of the laptop to initiate a videoconference, such as a lecturer standing for a lecture and a tutorial in which the speaker is demonstrating a product that requires a broader field of view than remaining seated before the camera.” Appx27-28.

The Board concluded that *Numazaki* and *Nonaka* discloses limitation 1(c). Appx32.

#### **4. Claims 8 and 13 in view of *Numazaki* and *Nonaka*.**

The Petitioner referred to its analysis of claim 1 for claims 8 and 13. See Appx161-162 and Appx165-166. Patent Owner relied on the same arguments it advanced for claim 1 for claims 8 and 13. See Appx309-310 and Appx312-313. The Board found that claims 8 and 13 are unpatentable over *Numazaki* and *Nonaka* for the same reasons as claim 1. Appx32.

## 5. Dependent Claims 4, 11, and 18.

Claims 4, 11, and 18 depend from claims 1, 8, and 13, respectively, and recite that the electro-optical sensor is fixed in relation to the digital camera. Appx57, 15:43–44, 16:17–19, 16:49–50.

For claims 4, 11, and 18, Petitioner argued that *Numazaki*'s fifth embodiment positions an electro-optical sensor and digital camera side-by- side such that they have overlapping fields of view. Appx156, Appx165–166. The Board found that Petitioner did not cite any expert testimony supporting this assertion. Appx33. The Board previously rejected Petitioner's argument “that being arranged in parallel necessarily means that reflected light extraction unit 102 and visible light photo-detection array 351 are fixed relative to each other” in the institution decision. Appx262.

Patent Owner argued that the portion of *Numazaki* cited by Petitioner for this feature does not contain any description of whether reflected light extraction unit 102 and visible light photo-detection array 351 are fixed with respect to each other. Appx308, 311, 314 (citing Appx959, 39:4–44). Patent Owner also argued, with support from its expert declarant, that one of ordinary skill in the art “would not interpret ‘arranged in parallel’ to necessarily mean that that ‘reflected light extraction unit 102’ and ‘visible light photo-detection array 351’ are fixed relative to each other.” Appx308 (citing Appx2002 ¶71).

The Board agreed with Patent Owner that the Petition does not establish sufficiently that *Numazaki*'s unit 102 and camera 351 are fixed relative to one another. Appx34. The Board reasoned "the mere fact that unit 102 and camera 351 are arranged in parallel and have overlapping fields of view does not establish that the structures are fixed." *Id.* The Board properly concluded that the Petition did not sufficiently establish that claims 4, 11, or 18 were obvious because the relevant structures of *Numazaki*'s (reflected light extraction unit 102 and camera 351) are not fixed relative to one another. Appx34.

#### **6. Dependent Claims 2, 3, 5-7, 9, 10, 12, and 14-17.**

Petitioner argued that dependent claims 2, 3, 5–7, 9, 10, 12, and 14–17 are rendered obvious by *Numazaki* and *Nonaka*. Appx151-161, Appx165, Appx167. Patent Owner relied on its analysis of its independent claims to argue that *Numazaki* and *Nonaka* did not render obvious these claims. Appx307, Appx310, Appx313. The Board agreed with Petitioner and found that *Numazaki* and *Nonaka* renders obvious claims 2, 3, 5–7, 9, 10, 12, and 14–17. Appx35.

#### **7. Jurisdiction Over Expired Patents**

Patent Owner argued that the USPTO does not have jurisdiction over expired patents. Appx286-287. The Board found that Patent Owner failed to "adequately explain why the Patent Office's authority to take a second look at an earlier

administrative grant of a patent ends when the patent term expires even though the rights granted by the patent are not yet exhausted.” Appx36.

## V. SUMMARY OF THE ARGUMENT

Substantial evidence supports the Board’s proper finding that claims 4, 11, and 18 of the ’949 Patent are not obvious in view of *Numazaki* and *Nonaka*. Petitioner did not establish that *Numazaki*’s unit 102 and camera 351 are fixed relative to one other. The fact that unit 102 and camera 351 are arranged in parallel and have overlapping fields of view does not establish that the structures are fixed. The Board’s decision that claims 4, 11, and 18 of the ’949 Patent are patentable should be affirmed.

The Board’s determination that claims 1-3, 5-10, and 12-17 of the ’949 Patent are unpatentable over *Numazaki* and *Nonaka* is not supported by substantial evidence. *Numazaki* and *Nonaka* do not render obvious claim elements [1(a)] because a PHOSITA would not have understood *Numazaki*’s “reflected light extraction unit” as being the claimed “electro-optical sensor.” Additionally, the Board failed to explain why Petitioner’s proposed modification would result in *Numazaki*’s “reflected light extraction unit” and “visible light photo-detection array” being located on the same “forward facing portion” of *Numazaki*’s laptop. *Numazaki* and *Nonaka* do not render obvious claim elements [1(b)] because a PHOSITA would not combine elements from the third, fifth, and eighth embodiments. *Numazaki* and

*Nonaka* do not render obvious claim elements [1(c)] because a PHOSITA would not have combined *Numazaki* and *Nonaka* based on the user's proximity to the laptop. The Board's decision that claims 1-3, 5-10, and 12-17 of the '949 Patent are unpatentable should be reversed.

Finally, the USPTO does not have jurisdiction over expired patents, therefore, the Board's decision should be vacated.

## VI. STANDARD OF REVIEW

"Obviousness is a mixed question of law and fact, and we review the Board's ultimate obviousness determination *de novo* and underlying fact-findings for substantial evidence." *Mylan Pharms. Inc. v. Merck Sharp & Dohme Corp.*, 50 F.4th 147, 152 (Fed. Cir. 2022) (cleaned up). "Substantial evidence is something less than the weight of the evidence but more than a mere scintilla of evidence . . . and means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1259 (Fed. Cir. 2010) (internal citations and quotations omitted). "If two inconsistent conclusions may reasonably be drawn from the evidence in the record, [the PTAB]'s decision to favor one conclusion over the other is the epitome of a decision that must be sustained upon review for substantial evidence." *Mylan Pharms. Inc. v. Merck Sharp & Dohme Corp.*, 50 F.4th 147, 152 (Fed. Cir. 2022) (cleaned up). If the Board lacks substantial evidence for its conclusions on obviousness, the final written decision

should be vacated. *See GE v. Raytheon Techs. Corp.*, 983 F.3d 1334, 1336 (Fed. Cir. 2020).

“Although we do not require perfect explanations, we may affirm the PTAB’s findings ‘if we may reasonably discern that it followed a proper path, even if that path is less than perfectly clear.’” *In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016) (citations omitted). The Board “must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (internal quotation marks and citation omitted). The Board presented an adequate evidentiary basis and path for its determination.

## VII. ARGUMENT

### A. The Board’s Determination That Claims 4, 11, and 18 are Patentable is Supported by Substantial Evidence.

The Board had substantial evidence to support its determination that claims 4, 11, and 18 are patentable. *See Appx32-35*. Claims 4, 11, and 18 depend from claims 1, 8, and 13, respectively, and recite that the electro-optical sensor is fixed in relation to the digital camera as follows:

- 4.** The portable device of claim 1 wherein the electro-optical sensor is fixed in relation to the digital camera.
- ...
- 11.** The method according to claim 8 wherein the electro-optical sensor

includes first and second sensors in fixed relation relative to the digital camera.

...

**18.** The image capture device of claim 13 wherein the sensor is fixed in relation to the digital camera.

Appx57, 15:43–44, 16:17-19, 16:49-50.

All of Petitioner's arguments stem from one giant failing by Petitioner itself—the failure to properly set forth any analysis and evidence in its Petition. With respect to claims 4, 11, and 18, and the limitation requiring “fixed in relation to,” the Petition’s sole paragraph was the following:

*iv. Claim 4*

*The portable device of claim 1 wherein the electro-optical sensor is fixed in relation to the digital camera.*

As discussed above with reference to limitation [1(a)], *Numazaki*'s fifth embodiment positions an electro-optical sensor (i.e., “reflected light extraction unit 102) and digital camera (i.e., visible light photo-detection array 351) side-by-side such that they have overlapping fields of view. Indeed, *Numazaki* expressly teaches that “visible light photo-detection array 351 and the reflected light extraction unit 102 are arranged in parallel.” *Numazaki* (Ex. 1004), 39:4-44.

Appx156. Although the paragraph references the Petition’s discussion of claim element [1(a)], there is no argument or evidence set forth in that claim element dealing with how *Numazaki* discloses the “fixed in relation to” claim term.

Appx144-147. Rather, the entirety of the argument is that *Numazaki* discloses that the reflected light extraction unit and the visible light photo-detection array are

“side-by-side such that they have overlapping fields of view” and that they “are arranged in parallel.” Appx156. The Petition does not argue that either of these disclosures teaches “fixed in relation to.” The Petition does not argue that a PHOSITA would understand overlapping fields of view as meaning that the two devices are “fixed in relation to” each other. The Petition does not argue that a PHOSITA would understand that having two devices “arranged in parallel” means that the two devices are “fixed in relation to” each other. The Petition does not argue that a PHOSITA would understand that a combination of overlapping fields of view with arranging devices in parallel means that the two devices are “fixed in relation to” each other. And the Petition does not cite to any evidence that a PHOSITA would reach these conclusions. It was not until Patent Owner filed its Patent Owner Response that challenged the only paragraph citing to *Numazaki* for the “fixed in relation to” term, that Petitioner marshalled entirely new evidence that had not been previously presented to the Board, but could easily have been presented in the Petition.

Now Petitioner seeks to blame the Board for its failings. But the Board analyzed the evidence before it and concluded that the Petitioner failed to meet its burden.

**1. The Board Did Not Mischaracterize Petitioner’s Argument as an Inherency Argument.**

Petitioner first argues on appeal that the “Board wrongly conflated Apple’s run-of-the-mill obviousness argument with an inherency argument.” Appellant Br. 29-42. Specifically, Petitioner argues that the “Board determined that Apple had ‘not establish[ed] sufficiently’ the obviousness of the fixed limitation in light of Numazaki based on a misunderstanding of Apple’s mode of argument.” Appellant Br. 29. This argument is belied by the FWD itself. Immediately after the Board stated that Petitioner does not establish sufficiently that *Numazaki* teaches the “fixed in relation to” claim term, the Board states “[a]t the oral hearing, counsel for Petitioner indicated that Petitioner’s position was not an inherency argument but relied on Dr. Bederson’s analysis and interpretation of Numazaki’s fifth embodiment.” Appx34. Based on this representation and the other evidence presented to the Board, the Board concluded that the Petition failed to “reference any such analysis in connection with the subject matter of claims 4, 11, and 18,” and that the “portions of the Petition . . . which pertain to limitation 1[(a)][] discuss the overlapping fields of view but [sic] not assert that overlapping fields of view require the structures to be fixed with respect to one another.” Appx34-35.

The Board specifically acknowledged that Petitioner was not relying on inherency and then based its conclusions on the Petitioner’s failure to show by a

preponderance of the evidence that the cited passages from *Numazaki* would have been understood to teach a fixed relationship. Petitioner attempts to combat this by arguing that “Apple argued that a skilled artisan would have understood Numazaki to encompass and favor a fixed configuration between the fifth embodiment’s sensor and camera, regardless of whether fixedness necessarily obtains in every conceivable instance of Numazaki’s device.” Appellant Br. 29. But none of that argument appears in the Petition. As shown above, the entirety of the argument concerning “fixed in relation to” is a single paragraph citing *Numazaki*’s teaching of overlapping fields of view and that certain devices are arranged in parallel. There is nothing in the Petition about how a skilled artisan would have understood these teachings of *Numazaki*—no citations to expert declaration exist for claim 4 in the Petition. The Board did not have a “single-minded focus on inherency,” rather the Board had a single-minded focus on the Petition and the analysis and evidence set forth in it. Based on that, the Board rightly concluded that Petitioner failed to meet its burden.

Petitioner incorrectly compares this case to *Power Integrations* where the Board focused on a red herring throughout its analysis. *See* Appellant Br. 36-37 (citing *Power Integrations, Inc. v. Lee*, 797 F.3d 1318, 1323-24 (Fed. Cir. 2015)). The Board in this case analyzed Petitioner’s obviousness analysis and never focused on the red herring—an inherency analysis. *See* Appx32-35. Not only did

the Board undertake to analyze Petitioner's obviousness analysis, but the Board never mentions the inherency doctrine or the “necessarily present” prong of the inherency doctrine, save one instance of mentioning the word “inherency.” The Board concluded its findings by stating: “we determine Petitioner has not shown by a preponderance of the evidence that the combination of *Numazaki* and *Nonaka* renders obvious claims 4, 11, or 18.” Appx35.

Petitioner cites the *Toyota Motor* case to incorrectly argue that the Board had a “singular focus on inherency.” Appellant Br. 30. In *Toyota Motor*, the Board found that “any combination of prior art that teaches the first two limitations of the challenged claims **inherently** would teach the [facilitating step].” *Toyota Motor Corp. v. Reactive Surfaces, Ltd.*, 816 F. App'x 480, 483 (Fed. Cir. 2020) (emphasis added). Here, the Board never applied the inherency doctrine or mentioned that the element of claims 4, 11, and 18 was inherently present.

Petitioner also cites *Par Pharm* to argue that the Board performed an inherency analysis. Appellant Br. 30-31. As with *Toyota Motor*, the *Par Pharm* court found that certain claim elements were inherent. *Par Pharm., Inc. v. TWi Pharm., Inc.*, 773 F.3d 1186, 1194 (Fed. Cir. 2014) (“The claimed pharmacokinetic properties with respect to a food effect, however, are inherent properties . . .”). Here, the Board never described the element of claims 4, 11, and 18 as being inherent.

Petitioner attempts to side step the Board’s analysis by arguing that “Apple’s petition indicated that the precise configuration between the sensor and camera taught or suggested their fixedness relative to each other because the configuration is key to the purpose of Numazaki’s fifth embodiment.” Appellant Br. 32. Tellingly, Petitioner does not quote from the Petition or provide any citation to the Petition for support for this statement. Instead, in the next paragraph, Petitioner continues its argument by citing to the Petition’s argument for claim element 1[(a)]. But the Board acknowledged this argument and found it unpersuasive— “[t]he portions of the Petition cited in the Reply (i.e., pages 27-28 [Appx. 144-146] of the Petition, which pertain to limitation 1[(a)]) discuss the overlapping fields of view but [sic] not assert that overlapping fields of view require the structures to be fixed with respect to one another.” Appx35. Thus, the Board analyzed the Petition’s arguments concerning overlapping fields of view and found them unpersuasive.

Petitioner next criticizes the Board because “the Board objected only that the petition lacked testimony from Apple’s expert ‘analy[zing] and interpret[ing]’ whether the fixed limitation was ‘required’ by Numazaki.” Appellant Br. 38. First and foremost, the Board never stated any such thing. Rather, the Board found that at “the oral hearing, counsel for Petitioner indicated that Petitioner’s position was not an inherency argument but relied on Dr. Bederson’s analysis and interpretation of Numazaki’s fifth embodiment.” Appx34. From that, the Board found that the

“Petition, however, does not reference any such analysis in connection with the subject matter of claims 4, 11, and 18.” *Id.* Such a finding was completely accurate.

During oral argument, Petitioner stated:

1                   MR. HART: It certainly does not use the word "fixed." And it does  
 2                   not expressly describe, you know, their mounting or their structure such that  
 3                   you could deem Numazaki to have expressly stated that these are fixed and  
 4                   do not move with respect to one another. The main support for this theory is  
 5                   the operation of the fifth embodiment, as Dr. Bederson analyzed, mandates  
 6                   that they would be fixed with respect to one another.

Appx438, 17:1-6. Then, when asked if this was an inherency argument, Petitioner responded:

9                   MR. HART: I would not. This is a 103 argument where  
 10                  Dr. Bederson is interpreting how one of skill in the art would understand  
 11                  these teachings. I think it's -- we're relying on Dr. Bederson's analysis of the  
 12                  fifth embodiment to conclude that these are in fact fixed with respect to one  
 13                  another. So we have not jumped through the hoops of inherency.  
 14                  I do think that it's more properly characterized as reliance on an  
 15                  expert's interpretation of the reference itself.

Appx438, 17:9-15. It is clear from Petitioner’s own statement that it was relying entirely on the conclusions of Dr. Bederson and his interpretation of *Numazaki*, none of which, as the Board properly found, was in the Petition.

To attempt to overcome the deficiency found in its Petition, the Petitioner now argues that the “Board’s objection missed the mark because a limitation’s obviousness need not turn on expert testimony or whether the limitation was required

or explicitly disclosed by a prior-art reference; instead, recourse to common sense and whether a skilled artisan would have ‘appreciate[d] the potential value’ of a limitation can be sufficient, and such a showing can be made even with ‘[n]o expert opinion.’” Appellant Br. 38. In other words, according to Petitioner, the Board was free to conclude that *Numazaki* did or did not render obvious the “fixed in relation to” limitation without considering expert opinion. The Board concluded after its analysis that the Petition failed to meet the burden of showing it by a preponderance of the evidence.

**2. The Board Did Not Abuse Its Discretion Because It Considered Petitioner’s Obviousness Argument and the Material Evidence Before It.**

The Petitioner argues that to “the extent that the Board meant to convey that an ordinary obviousness argument regarding the fixed limitation fell outside the scope of the proceedings, such a decision was an abuse of discretion . . .” Appellant Br. 39. There was no abuse of discretion by the Board because as shown above the Board acknowledged that the Petitioner was relying on obviousness. The Board’s analysis took into account all arguments and evidence both from the Petition and the expert testimony in the case. No abuse of discretion exists.

**3. The Board Did Not Ignore Any Material Evidence.**

According to the Petitioner, the “Board improperly failed to account for two key pieces of evidence.” Appellant Br. 46. First, the Petitioner states that the “Board

ignored Apple's supplemental expert declaration . . .," and second that the "Board ignored Gesture Technology's expert's" testimony. *Id.*, pp. 46-47. Both are demonstrably false.

In its FWD, the Board found

Petitioner replies by arguing that the fact that unit 102 and camera 351 have and must retain overlapping fields of view is key to concluding that they are fixed relative to each other. Reply 19–20 (citing Pet. 27–28). Petitioner also argues that Mr. Occhiogrosso admits, and Dr. Bederson confirms, that (1) "unit 102 and camera 351 must retain overlapping fields of

view in order to 'satisfy the intended purpose' of Numazaki's fifth embodiment;" (2) "that fixing unit 102 and camera 351 in relation to one another ensure that they retain overlapping fields of view;" and (3) there is no "teaching in Numazaki that suggests unit 102 and camera 351 are not fixed in relation to on another." *Id.* at 20 (citing Ex. 1019, 23:21–24:22, 25:7–14, 25:18–26:2; Ex. 1018 ¶¶ 13–15).

Appx33-34. The citations provided Ex. 1018 (Appx1772-1785) and Ex. 1019 (Appx1786-1854) are the supplemental expert declaration of Dr. Bederson and the testimony of Mr. Ochiogrosso, respectively. It is clear that the Board considered the arguments made by the Petitioner with respect to that evidence but concluded that they did not provide a preponderance of evidence to conclude that claims 4, 11 and 18 were obvious.

Moreover, the Board did not “nominally reference[] the evidence” as alleged by the Petitioner. Appellant Br. 48. Rather, the Board acknowledged the evidence and concluded that “[w]ithout more, the mere fact that unit 102 and camera 351 are arranged in parallel and have overlapping fields of view does not establish that the structures are fixed.” Appx34. Petitioner seeks to have the Court find that the Board must be reversed because Petitioner’s expert concluded that *Numazaki* rendered obvious the limitation of “fixed in relation to.”

But there was ample evidence to support the Board’s conclusion. For example, Patent Owner’s expert opined that a PHOSITA would not interpret “arranged in parallel” to mean that the “reflected light extraction unit 102” and “visible light photo-detection array 351” are fixed relative to each other. *See also* Appx2002, ¶ 71. Patent Owner’s expert explained:

71. Moreover, the Petition cites to only a single portion of *Numazaki* to argue that “reflected light extraction unit 102” (i.e., the claimed electro-optical sensor) is fixed in relation to “visible light photo-detection array 351” (i.e., the claimed digital camera). *See Pet.*, p. 38 (citing Ex. 1004, 39:40-44 (“visible light photo-detection array 351 and the reflected light extraction unit 102 are arranged in parallel.”)). That portion of *Numazaki* does not contain any description of whether those two components are fixed with respect to each other. *See Ex. 1004, 39:4-44*. Nor do the figures associated with that portion of *Numazaki*. *See Ex. 1004, Figs. 46-53*. In my opinion, a POSITA would not interpret “arranged in parallel” to necessarily mean that that “reflected light extraction unit 102” and “visible light photo-detection array 351” are fixed relative to each other. Specifically, the block diagram in Fig. 46, depicting “the visible light photo-detection array 351 and the reflected light extraction unit 102 [] arranged in parallel” does not convey to a POSITA that these components are fixed relative to each other in a spatial context. For at least these reasons, the combination of *Numazaki* and *Nonaka* fails to render claim 4 unpatentable.

Appx2002, ¶ 71. The Board agreed with Patent Owner’s expert both in its institution decision and in its FWD. *See Appx262* (“We are not persuaded, however, that being arranged in parallel necessarily means that reflected light extraction unit 102 and visible light photo-detection array 351 are fixed relative to each other . . . we question whether Petitioner establishes sufficiently that claims 4, 11, and 18 would have been obvious in view of *Numazaki* and *Nonaka*.”). *Numazaki* never discloses the “reflected light extraction unit 102” and the “visible light photo-detection array 351”

have or require identical fields of view. *See* Appx959, 39:20-60. Additionally, Patent Owner's expert confirmed that movement of these two components (102, 351) relative to each other does not necessarily result in non-overlapping fields of view.

10                   Q.     **If one of the unit 102 or camera 351**  
11     **were moved while the other remained in place, they**  
12     **would no longer have overlapping fields of view,**  
13     **correct?**  
14                   A.     Well, that would depend on the amount  
15     of movement.

Appx1809, 24:10-15. Further, Patent Owner's expert testified that only a "partial overlap" in the fields of view is needed to accomplish the goal of *Numazaki*'s fifth embodiment. Appx1809, 24:16-24. Accordingly, Petitioner's alleged "overlapping fields of view" requirement is not a barrier to movement of these two components (102, 351) relative to each other.

The Board echoed its decision on institution in the FWD. And while the Board considered Petitioner's arguments from its reply and from oral argument in making its determination that *Numazaki* does not render obvious the "fixed in relation to" term, the Board did not have to consider either Petitioner's Reply or its late, new expert evidence. Appx33-34. Petitioner's supplemental expert declaration

raised opinions and evidence that could have been presented with the Petition.

According to the Board's practice guide:

Petitioner may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a *prima facie* case of unpatentability . . . While replies and sur-replies can help crystallize issues for decision, a reply or sur-reply that raises a new issue or belatedly presents evidence may not be considered. The Board is not required to attempt to sort proper from improper portions of the reply or sur-reply . . . It is also improper for a reply to present new evidence (including new expert testimony) that could have been presented in a prior filing.

PTAB Consolidated Trial Practice Guide, November 2019, pp. 73-75. Thus, the Board was free to ignore this evidence if it chose to do so. But the Board acknowledged this evidence in reaching its FWD.

The Board never indicated that it disregarded the supplemental expert declaration of Dr. Bederson. The Board mentioned Dr. Bederson and cited the declaration in its FWD. Appx33-34 (“Dr. Bederson confirms. . .Ex. 1018”). The Board also credited the supplemental expert declaration of Dr. Bederson regarding the capabilities of a PHOSITA. *See* Appx24 (“We particularly credit Dr. Bederson’s uncontroverted testimony...”). The *AMC* case cited by Petitioner is inapposite because the Board never ruled that any of Petitioner’s arguments should be disregarded for being untimely. *AMC Multi-Cinema, Inc. v. Fall Line Pats., LLC*, No. 21-1051, 2021 WL 4470062, at \*6, \*8 (Fed. Cir. Sept. 30, 2021) (“First, the Board ruled that AMC’s reply arguments were untimely and therefore to be

disregarded.”). Similarly, the *Apple* case cited by Petitioner is inapposite because the Board never ruled that arguments contained impermissible new matter. *Apple Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 707 (Fed. Cir. 2020) (concluding that the reply brief constituted impermissible new matter). Petitioner also cites the *Altaire* decision where the Board assigned “no weight” to an expert declaration “because it was improper reply evidence.” Appellant Br. 47; *Altaire Pharm., Inc. v. Paragon Bioteck, Inc.*, 889 F.3d 1274, 1284 (Fed. Cir. 2018). The *Altaire* decision is inapposite because the Board in this case considered and cited the supplemental expert declaration of Dr. Bederson.

Ultimately, the Board sided with the Patent Owner and agreed with Patent Owner’s arguments in its sur-reply and at the oral hearing. Appx34 (citing Appx376 and Appx441-442, Tr. 20:21-21:3, the argument at the oral hearing referring to expert testimony). Accordingly, the Board’s determination that claims 4, 11, and 18 are patentable is supported by substantial evidence and should be affirmed.

**B. The Board Erred in Determining That Claims 1-3, 5-10, and 12-17 are Unpatentable Because *Numazaki* and *Nonaka* Do Not Render Obvious Claim 1.**

The combination of *Numazaki* and *Nonaka* does not render obvious claims 1-3, 5-10, and 12-17 of the ’949 Patent. The Board used independent claim 1 as exemplary to incorrectly invalidate the remaining independent claims 8 and 13. *See* Appx32. Patent Owner relied on its arguments for independent claims 1, 8, and 13

for the validity of dependent claims 2, 3, 5-7, 9, 10, 12, and 14-17. *See Appx35, Appx307, Appx310, and Appx313.* Thus, Patent Owner focuses on the Board's errors concerning claim 1.

The FWD focuses on three limitations of claim 1: claim limitation 1(a) (Appx16-Appx21), claim limitation 1(b) (Appx21-Appx26), and limitation 1(c) (Appx26-Appx32). Each limitation and the errors the Board committed are discussed in turn below.

**1. *Numazaki and Nonaka Do Not Render Obvious Claim Element [1(a)].***

Claim element [1(a)] recites “a device housing including a forward facing portion, the forward facing portion of the device housing encompassing an electro-optical sensor having a field of view and including a digital camera separate from the electro-optical sensor.” Accordingly, both the claimed “electro-optical sensor” and the claimed “digital camera” are located on the same “forward facing portion” of the “device housing.”

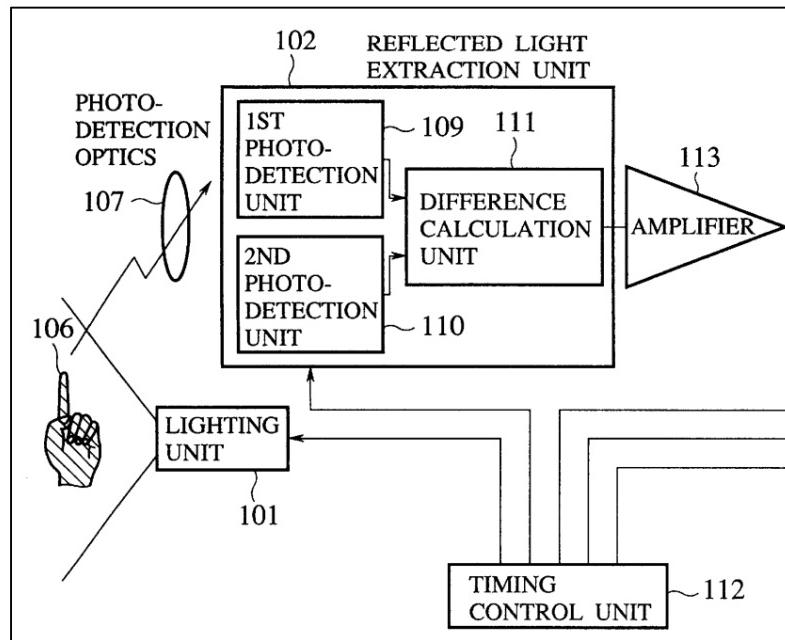
The Board’s finding that “the combination of *Numazaki* and *Nonaka* discloses limitation [1(a)],” Appx21, is not supported by substantial evidence because (a) a PHOSITA would not have understood *Numazaki*’s “reflected light extraction unit” as being the claimed “electro-optical sensor” and (b) the Board failed to explain why Petitioner’s proposed modification would result in *Numazaki*’s “reflected light

extraction unit” and “visible light photo-detection array” being located on the same “forward facing portion” of *Numazaki*’s laptop, as claim element [1(a)] requires.

**a. A PHOSITA Would Not Have Understood *Numazaki*’s “reflected light extraction unit” as being the “electro-optical sensor”**

The Board found that the “combination of *Numazaki* and *Nonaka* discloses claim element [1(a)]” because a PHOSITA would have understood *Numazaki*’s “reflected light extraction unit 102” to be the claimed “electro-optical sensor.” Appx17-19. Patent Owner asserts that the Board’s finding is not supported by substantial evidence.

A portion of Figure 2 including *Numazaki*’s “reflected light extraction unit 102” is reproduced below:



Appx840, Fig. 2 (cropped). Further, Petitioner describes operation of *Numazaki's* “reflected light extraction unit 102” as follows:

A timing control [112] unit is used to turn lighting unit 101 on (i.e., illuminating the target object) when the first camera unit [109] is active and off when the second camera unit is active [110] . . . The result of this light control is the first camera unit [109] captures an image of the target object illuminated by both natural light and the lighting unit 101 and the second camera unit [110] captures an image of the target object illuminated by only natural light . . . The difference between the two images—obtained by difference calculation unit 111—[is a “reflected light image” that] represents the “reflected light from the object resulting from the light emitted by the lighting unit 101.”

Appx130. Because of its “difference calculation unit 111” and its two separate “photodetection unit[s]” having specific timing and lighting requirements, a PHOSITA would not have understood *Numazaki's* “reflected light extraction unit 102” as being the “electro-optical sensor” of claim element [1(a)]. Appx1986-1987, ¶ 45.

But the Board glossed over the presence of “difference calculation unit 111,” the two “photo-detection units” (i.e., two cameras), and the specialized timing requirements. Instead, the Board focused on one core functionality and found that because *Numazaki's* “reflected light extraction unit 102 . . . senses light and converts the sensed light into electronic signals, which is consistent with the plain meaning of an ‘electro-optical sensor,’ . . . reflected light extraction unit 102 satisfies the claimed electro-optical sensor.” But just because two components perform, at some

level, the same core functionality, does not mean they are interchangeable. A train and a ship both transport passengers. But that does mean a train would be classified as a ship, or *vice versa*.

Even if the issues surrounding the “difference calculation unit 111” are ignored, the Board, citing the testimony of Patent Owner’s expert, noted that “photo-detection units 109, 110 are electro-optical sensors.” Appx18 (citing Appx1800-1801, 15:21-16:3). It is undisputed that “photo-detection units 109, 110” are components of “reflected light extraction unit 102.” But if the Board also considers “reflected light extraction unit 102” to be an electro-optical sensor, then the Board’s position is that an electro-optical sensor (reflected light extraction unit) consists of one or more electro-optical sensors (photo-detections units). This cannot be correct. A PHOSITA would not consider an electro-optical sensor to consist of electro-optical sensors.

At bottom, the Board’s determination that *Numazaki’s* “reflected light extraction unit 102” renders obvious the “electro-optical sensor” limitation of claim element [1(a)] is not supported by substantial evidence.

**b. Sensor and Camera Must be on Same “Forward Facing Portion”**

Claim element [1(a)] requires the same “forward facing portion” of the device housing to include both the “electro-optical sensor” and “a digital camera.” The

Board provides no analysis of how the sensor and camera are included on the “forward facing portion” of the device housing. The closest the Board gets to addressing the claim requirement is repeating Petitioner’s argument that a PHOSITA “would have understood that both reflected light extraction unit 102 and visible photo-detection array 351 are forward facing.” Appx17. This is insufficient to determine that the sensor and camera are included on the same “forward facing portion” of the device housing.

Petitioner proposed modifying *Numazaki*’s eighth embodiment by including the reflected light extraction unit and the visible light photo-detection array from *Numazaki*’s fifth embodiment to provide videoconference functionality. Appx138-139, Appx144-145. Petitioner never explains or argues that the camera and sensor are on the “forward facing portion” as required by claim element [1(a)].

Specifically, Petitioner contends that *Numazaki*’s “reflected light extraction unit 102” is the claimed electro-optical sensor. Appx146. Petitioner also contends that “[*Numazaki*’s] ‘visible light photo-detection array 351’ is [the] digital camera as claimed.” *Id.* Petitioner is silent on how the sensor and camera are both on the “forward facing portion” of the device housing. More importantly, for this appeal, the Board provides no analysis or reasoning as to how the same “forward facing portion” of the device housing includes both the visible light photo-detection array and the reflected light extraction unit.

Accordingly, the Board's determination that *Numazaki* and *Nonaka* renders obvious the recited "forward facing portion" that requires a sensor and a camera of claim element [1(a)] is not supported by substantial evidence.

**2. *Numazaki* and *Nonaka* Do Not Render Obvious Claim Element [1(b)].**

Claim element [1(b)] recites: "a processing unit within the device housing and operatively coupled to an output of the electro-optical sensor, wherein the processing unit is adapted to: determine a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output." Petitioner contends that *Numazaki* teaches or suggests claim element [1(b)].

The Board's determination that *Numazaki* and *Nonaka* render obvious claim element [1(b)] is not supported by substantial evidence because a PHOSITA would not combine elements from the third, fifth, and eighth embodiments.

**a. A PHOSITA Would Not Have Combined Elements From *Numazaki*'s Third, Fifth, and Eighth Embodiments**

The Board incorrectly found that a PHOSITA would insert the entire information input generation apparatus ("IIGA") from the fifth embodiment into the eighth embodiment, then add the feature data generation unit configured for gesture recognition of the IIGA from the third embodiment into the eighth embodiment. *See Appx21-26.*

The Board does not explain how the “reflected light image” from the “reflected light extraction unit 102” would be accessed by both “shape interpretation unit 333” from the third embodiment and “extraction unit 353” from the fifth embodiment” or “how these specialized units would operate simultaneously or whether different units would operate at different times or what that timing functionality would require.” *See Appx23-25.*

The Board failed to provide insight on how a PHOSITA would understand to combine the multiple disclosures of *Numazaki*. *Numazaki* discloses that the IIGA includes a feature data generation unit 103. Appx942, 5:10–12; Appx840, Fig. 2. *Numazaki*’s third embodiment, discloses that the IIGA is configured as “a gesture camera” by implementing the feature input generation apparatus and feature data generation unit. Appx942, 6:4–7; Appx954, 29:4–10; Appx861, Fig. 23. *Numazaki*’s fifth embodiment, discloses that the IIGA is configured as “a chromakey camera” by implementing the IIGA of Figure 2 with feature data generation unit 103 and visible light photo-detection array 351 depicted in Figure 46. Appx959, 39:17–23; Appx883, Fig. 46; Appx1992-1993 ¶ 54. *Numazaki*’s eighth embodiment, discloses a computer with an IIGA. Appx911, Fig. 74; Appx959, 50:21-26. The Board provides no analysis for how a PHOSITA would combine these three different implementations given the specialized units of the feature data generation units (shown in Figures 23 and 46) and the fact that certain embodiments operate as

a gesture camera while others operate as a chromakey camera. *See Appx861, Fig. 23; Appx883, Fig. 46; Appx954, 29:4–10; Appx959, 39:17–23.*

Accordingly, the Board’s determination that a PHOSITA would have combined elements from *Numazaki*’s third, fifth, and eighth embodiments to render limitation of claim element [1(b)] is not supported by substantial evidence.

### **3. *Numazaki* and *Nonaka* Do Not Render Obvious Claim Element [1(c)].**

Claim element [1(c)] recites “control the digital camera in response to the gesture performed in the electro-optical sensor field of view, wherein the gesture corresponds to an image capture command, and wherein the image capture command causes the digital camera to store an image to memory.”

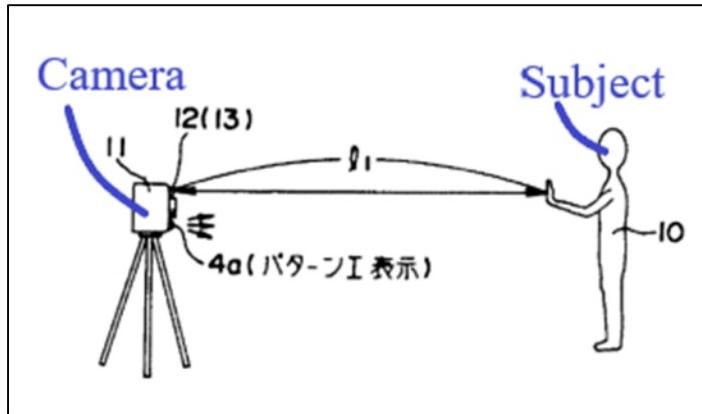
The Board’s determination that *Numazaki* and *Nonaka* render obvious claim element [1(c)] is not supported by substantial evidence because a PHOSITA would not have combined *Numazaki* and *Nonaka* based on the proximity of the user.

#### **a. A PHOSITA Would Not Have Combined *Numazaki* and *Nonaka***

A PHOSITA would not have combined *Numazaki* and *Nonaka*. The Board found that a PHOSITA would have recognized that *Nonaka*’s gesture-based image capture functionality was a desirable technique for triggering image capture in general. Appx29.

*Numazaki's* fifth embodiment discloses extracting faces of speaking persons for transmission via a “TV telephone.” *See Appx959*, 39:5–16. A PHOSITA “would recognize that to dial the telephone number, the user must physically interact with *Numazaki's* laptop (e.g., keyboard), and thus the user would already be positioned ‘in place’ for the videoconference.” Appx303 (citing Appx959, 39:5–16; Appx1997 ¶62). There is no motivation to modify *Numazaki* based on *Nonaka*'s teachings because “[i]t would be redundant to require the user to then perform a gesture signaling that the user is ‘in place’ because such is already known to the laptop by virtue of the physical interactions,” and one of ordinary skill in the art “would recognize that a user would be in reach of *Numazaki's* laptop before and during a videoconference enabled by *Numazaki's* laptop.” Appx303-304 (citing Appx1997-1998 ¶¶ 62–63).

*Nonaka*'s teachings and its alleged benefits apply when the subject of the photograph must stand beyond the reach of the camera to take a photograph. This is shown in Fig. 3 (reproduced below):



Appx1003, Fig. 3 (annotated). Here, the subject “gives a release instruction by means of a predetermined motion towards the camera” to trigger the photograph. Appx987, p. 3. Thus, in *Nonaka*’s system, the subject can photograph themselves without the need for a timer or a remote control. In contrast, a PHOSITA would recognize that a user would be within reach of *Numazaki*’s laptop before and during a videoconference enabled by *Numazaki*’s laptop. In fact, the user would likely be sitting at a desk in front of *Numazaki*’s laptop before and during the teleconference.

Accordingly, the Board’s determination that *Numazaki* or *Nonaka* teach the single gesture limitation of claim element [1(c)] is not supported by substantial evidence.

### C. The USPTO Does Not Have Jurisdiction Over The Expired ’949 Patent

In *Oil States*, the Supreme Court explained that the “decision to *grant* a patent is a matter involving public rights—specifically, the grant of a public franchise.” *Oil States Energy Servs., LLC v. Greene’s Energy Grp., LLC*, 138 S. Ct. 1365, 1373

(2018). “Specifically, patents are public franchises that the Government grants to the inventors of new and useful improvements.” *Id.* (internal quotation marks omitted). The Court explained that “Congress [has] significant latitude to assign [the] adjudication of public rights to entities other than Article III courts.” *Id.* at 1368. In exercising its “significant latitude,” Congress grants public franchises “subject to the qualification that the PTO has the authority to reexamine—and perhaps cancel—a patent claim in an inter partes review.” *Id.* at 1368, 1374 (internal quotation marks omitted). Accordingly, so long as the public franchise exists, the Patent Office may have jurisdiction to amend and cancel the claims of the patent (e.g., via *inter partes* review).

When a patent expires, however, the public franchise ceases to exist and the franchisee (e.g., the patent owner) no longer has the right to exclude others. At most, the franchisee may be entitled to collect damages from the public franchise that formerly existed through an infringement action in district court. But because the public franchise no longer exists after the patent expires, the Patent Office has nothing in its authority to cancel or amend. Expiration removes the patent from the Patent Office’s jurisdiction and returns it to the sole jurisdiction of the Article III courts, which have exclusive authority to govern claims for damages. If this were not so, the Patent Office would purport to have authority to retroactively modify a public franchise that no longer exists, in a setting where the expired public franchise

does not enjoy any presumption of validity and in which amendment of claims is no longer permitted.

The '949 Patent issued in November 2014 and expired in May 2020, long before the IPR Petition was filed on June 2, 2021. With the expiration of the '949 Patent in May 2020, the Board ceased to have jurisdiction over the '949 Patent, and the FWD should be vacated as a result.

### **VIII. CONCLUSION AND RELIEF SOUGHT**

For the foregoing reasons, Cross-Appellant respectfully submits that the Court:

- (i) affirm the Board's determination that claims 4, 11, and 18 of the '949 Patent are patentable;
- (ii) reverse or vacate the Board's determination that claims 1-3, 5-10, and 12-17 of the '949 Patent are unpatentable; and
- (iii) vacate the Board's determination because the Board does not have jurisdiction over the expired '949 Patent.

Dated: October 18, 2023

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that I electronically filed the foregoing with the Clerk of the Court of the United States Court of Appeals for the Federal Circuit by using the appellate CM/ECF system on October 18, 2023.

I certify that all participants in the case are registered CM/ECF users and that service will be accomplished by the appellate CM/ECF system.

Dated:      October 18, 2023

*/s/ Fred I. Williams*  
Fred I. Williams

**FORM 19. Certificate of Compliance with Type-Volume Limitations**Form 19  
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Date: 10/18/2023Signature: /s/ Fred I. WilliamsName: Fred I. Williams